DOCUMENT RESUME

ED 216 260 CG 015 874

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TITLE Children's and Adults' Recognition of Spontaneous and Posed Emotional Expressions in Young Children.
SPONS AGENCY National Science Foundation, Washington, D.C.
PUB DATE Aug 81
GRANT NSF-BNS-78-09108; NSF-BNS-79-21027
NOTE 24p.; Paper presented at the Annual Convention of the American Psychological Association (89th, Los Angeles, CA, August 24-26, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adults; *Affective Behavior; *Age Differences; Emotional Response; Ethnicity; Higher Education; *Identification; Influences; *Peer Evaluation; Preschool Education; *Recognition (Psychology); Social Cognition; *Spontaneous Behavior; Young Adults; Young Children

ABSTRACT

Although the recognition of the affective experiences of peers is an important prerequisite for social adaptation, children's ability to recognize peers' facial displays of emotion remains unexamined. To investigate the degree to which young children were able to enact expressions of emotion that were recognizable by peers and adults, and to examine the accuracy of recognition as a function of age, and expressions as posed or spontaneous, two samples (N=91 and N=60) of children, aged four and five, and two samples (N=71 and N=32) of adult university undergraduates rated slides of the facial expressions of eight young children for four affective states--happiness, sadness, anger, and neutrality. Adults were more accurate than children in recognizing neutral states, less accurate for happiness and anger, and were not superior in recognizing sadness. The sex and ethnicity of the child appearing on the slides influenced only the adults' recognition of anger. The results indicate that both accuracy and inaccuracy in recognizing emotional expressions are influenced by processes other than recognition. (MCF)

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Children's and Adults' Recognition of Spontaneous and Posed Emotional Expressions in Young Children

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Running head: Recognition of emotions

This research was supported by National Science Foundation grants BNS 78-09108 and BNS 79-21027 to John C. Masters. Requests for reprints should be sent to John C. Masters, Vanderbilt Institute for Public Policy Studies, 1208 18th Avenue South, Nashville, Tennessee 37212.

Children's and Adults' Recognition of Spontaneous and Posed Emotional Expressions in Young Children

Despite a long history of study, there are several basic issues regarding facial expressive behavior that have yet to be resolved. Children's ability to recognize their peers' facial displays of emotion remain essentially unexamined. This is surprising since the ability to recognize the affective experiences of peers is an important prerequisite for successful social adaptation (Gates, 1923; Gilbert, 1969; Shantz, 1975). Another issue that has received little attention is the degree to which young children can intentionally produce facial expressions of emotion so that they may, for example, intentionally display emotion that they may--or may not--be experiencing.

In order to examine either of these issues carefully, a set of stimuli that depict children's spontaneous expressions of emotion is required, and few studies have employed pictorial records of children's spontaneous emotional displays as stimuli. Buck (1975) videotaped children's facial expressions while they viewed affect inducing slides and also obtained posed expressions by instructing children to role-play different affective states. Feinman and Feldman (Note 1) employed Buck's slides and found that preschoolers' posed expressions were more recognizable than their spontaneous productions. Children's posed displays of happiness (84%) and sadness (56%) were decoded by unfamiliar adults at levels significantly better than chance, but for spontaneous expressions, only happiness was decoded significantly better than chance (50%) and the accurate recognition of anger occurred significantly less often than chance (16%). These results parallel Zuckerman, Hall, DeFrank and Rosenthal's (1976) finding that adults' posed expressions were more recognizable than their spontaneous productions of emotion.

The present experiment addressed several issues not fully resolved in prior research. One purpose was to examine young children's ability to recognize emotional states displayed by their peers, something that has not been addressed despite the role that affect and affective displays may play in peer interaction and the peer socialization process (Furman & Masters, 1980). A second issue of concern was the interactive influence of personal characteristics such as the sex and race of the child displaying an emotion on children's and adults' ability to recognize children's affective states. There is some evidence that sex and race interact to influence the recognizability of different emotional states (Eiland & Richardson, 1976), but the role of these factors in the perception of emotions in children by either adults or peers remains unclear. Finally, the study utilized both posed and spontaneous expressions of emotion to examine more carefully the conditions under which young children's spontaneous emotional expressions are less recognizable than their posed expressions. The affect induction procedure employed by Rosenhan, Underwood, and Moore (1974) and others (e.g., Masters & Furman, 1976) was used to elicit affective states and accompanying emotional expressions in children ages four and five.

An important precaution that has been absent in prior studies of the recognizability of emotional states or their communication accuracy concerns the analysis of the role that may be played by basic inclinations to use--or not to use--various categories of emotional labels. "Positive" labels such as happiness may be more readily applied to others than are negative labels such as sadness or anger, and independent variation in the base rates with which emotion labels are used may contribute to or

detract from accuracy of recognition in a manner not reflecting true discriminative ability or communicative accuracy. The present investigation analyzed both "raw" accuracy for the recognition of emotion and employed a conditional accuracy measure that adjusted for the variance in base rates for the use of emotion labels. In addition, analyses were conducted on the base rates alone to reveal the ways that children and adults may vary in their use of different emotion categories as they judge emotions in others.

Extrapolating from previous findings, several predictions were rendered. Adults were expected to be more accurate in recognizing affective states than children (Gates, 1923; Ekman & Oster, 1979), and female adults were expected to be better decoders than male adults (Zuckerman et al., 1976; Hall, 1978). Happiness was expected to be the most recognizable affective state (Borke, 1971; Buck 1975). Finally, accuracy for spontaneous expressions was expected to be significantly greater than accuracy for posed expressions. This prediction was based on the hypothesis that children's productive capacity is limited (cf. Odom & Lemond, 1972) and that their knowledge of expressive cues is not fully developed. It was also assumed that there would have been no erosion of the basic clarity of spontaneous expressions shown by the stimulus children through the operation of any inhibitive display rules since the photographs were made in a relatively private setting, during a period of quiet contemplation (Saarni, 1979).

Method

Subjects

Subjects were two independent samples of children between the ages of four and five and two samples of university undergraduates. Sample A (N=91)

consisted of 20 children (9 girls and 11 boys) and 71 adults (41 female and 30 male) from a medium sized metropolitan area in the mid-south. Sample B (N=60) consisted of 28 children (14 girls and 14 boys) and 32 adults (19 female and 13 male) drawn from a large metropolitan city in the northwest. Children were drawn from preschools that included a broad range of socio-economic classes, and were randomly distributed by sex. Adult subjects were drawn from undergraduate psychology classes at universities in each geographic locale.

Stimuli

The facial expressions of eight four or five year old children, two white females, two white males, two black females and two black males, were photographed as they displayed each of four affective states (happiness, sadness, anger and neutrality). Spontaneous displays were elicited for photographing via a standardized affect induction procedure (Rosenhan et al., 1974). Subsequently, posed expressions were obtained by instructing the stimulus children to look as if they were feeling happy, sad, mad or just okay.

Procedure

Children were interviewed individually by one of the three female experimenters who explained that he or she would be viewing a series of slides of children who "sometimes look happy, sometimes sad, sometimes mad or sometimes look like they are feeling just okay." The subject was instructed that for each slide, he/she was to decide whether the pictured child looked happy, sad, mad or just okay (i.e., neutral). Slides were presented in two random orders to avoid serial effects. The order in which the experimenter presented the response alternatives was also randomly varied.

Children rated the slides in two sessions, each of which lasted approximately fifteen to twenty minutes. Response latencies were obtained for children in sample A. These latencies represented the amount of time it took the child to respond after the experimenter finished presenting the response alternatives.

Adult subjects rated all slides in one viewing session. In addition, adults viewed the slides in groups of eight or fewer and recorded their own responses on an answer sheet (as for children the order of the response categories was randomized for each slide). Adults also rated the intensity of each expression on a three point scale.

Results

The two geographic samples were treated as replications of one another and decision rules were used to disregard effects that failed to replicate. All significant effects common to the two samples are reported, as are ones reaching an acceptable level of significance in one sample ($p < .05$) and approaching significance in the other. Any effects significant in only one of the two samples were disregarded unless similar findings were obtained in independent investigations that gathered comparable data (Carlson, Felleman, & Masters, Note 2; Carlson & Masters, Note 3. For example, in studies that investigated the effects of subjects' emotional states on their ability to recognize emotion in others, the accuracy data for subjects in a neutral affective state were considered comparable to the accuracy data in the present study. Finally, for individual group comparisons following up significant ANOVAs, results will be reported that are significant in both samples or significant in one and with a mean difference in the same direction for the other. When a given effect, especially an

interaction, was significant for both samples it was considered to have replicated only if the major elements of the internal structure (i.e., the major group differences) were the same for each sample.

Overall Accuracy

For each subject the proportion of correct responses for each affect category was calculated across the two stimulus children of the same race and sex. These data were subjected to a 6-way ANOVA in which the age and sex of the subject were between subject factors and the affect of the stimulus child, mode of production (spontaneous vs. posed), race and sex of the stimulus child were the within subject factors.

In general, adults were more accurate than children,[1] F (1, 87) = 52.27, p <.001; F (1, 56) = 2.64, p <.11. The greater accuracy of adults was more pronounced in sample A than in sample B (68%*vs. 50%*;68%*vs. 64%*). For sample A, adults' superiority over children was especially evident in the recognition of neutral states, F (3, 261) = 2.92, p <.05, (49%*vs. 22%),[2] while for sample B, adults' superiority was actually significant only for the recognition of neutrality, F (3,168) = 19.91, p <.001, (50%*vs. 23%).[3]

As predicted, accuracy for happiness (88%*and 96%*)was significantly higher than for any other state. Sadness (59%*and 68%*), and anger (55%* and 63%*)were recognized with equal accuracy within each sample. Accuracy for the recognition of neutrality (35%*and 36%*)was significantly lower than that for any other state, F (3,261) = 123.99, p <.001; F (3,168) = 185.40, p <.001. The equal accuracy for recognizing sadness and anger held true for adults (64%*vs. 63%*; 64%*vs. 64%*)but not children, F (3,261) = 2.92, p <.05; F (3,168) = 19.91, p <.001, who were significantly better at recognizing sadness than anger (53%*vs. 43%*; 73%*vs. 62%*).

Accuracy in the recognition of spontaneous and posed emotional experiences varied as a function of the particular affect, F (3,261) = 4.63 p <.004; F (3,168) = 4.74, p <.004. Spontaneous displays of happiness were recognized more accurately than posed ones (91%*vs. 84%*;97%*vs. 95%*). For the recognition of other states, spontaneous and posed expressions were equally recognizable. A higher-order interaction involving the sex and race of the stimulus child as well as the particular affect displayed was also found for both samples, F (3,261) = 14.11, p <.001; F (3,70) = 11.38, p <.001. For the recognition of anger, results indicated that white females' spontaneous expressions of anger were significantly more recognizable than their posed ones (71%* vs. 34%*;80%* vs. 48%*), while white males' posed displays of anger were significantly more recognizable than their spontaneous ones (55%*vs. 75%*;57%*vs. 82%*). An even higher order interaction involving the age of subjects revealed that this finding held only for adults, F (3,261) = 4.25, p <.006; F (3,70) = 3.38, p <.02.

Base rates in the use of affect category labels

The various categories of affect were equally represented in the stimulus materials. However, levels of overall accuracy in the apparent recognition of emotional expressions could have been influenced by any systematic differences in the frequency with which subjects used the different affect category labels. Consequently, base rates for label usage were calculated by computing the percentage of times subjects used each of the four category labels independent of the particular affect displayed in the slides (which was equal for all affects). These data were then subjected to a 3-way ANOVA in which the age and sex of the subjects were between subject factors and the affect category label was

the within subject factor. Subjects used the label happy (34%* and 35%*) significantly more often than sad (28% and 30%), mad (22% and 22%) or neutral (16%* and 14%*), F (3, 261) = 41.69, p <.001; F (3, 168) = 73.14, p <.001.

The use of affect labels also varied as a combined function of the subjects' age and the particular emotion category, F (3, 261) = 3.79, p <.01; F (3, 168) = 16.95, p <.001. Adults labeled slides as neutral more often than children (19%* vs. 13%*; 20%* vs. 8%*). In addition, children tended to label slides as sad more often than did adults (30% vs. 25%; 34% vs. 25%).

Differential Accuracy

The results indicating significant variation in the use of affect category labels suggested that subjects' overall accuracy scores may have been hindered or enhanced because of their tendency to use certain affect category labels more or less than others. In order to explore this possibility, a differential accuracy score was calculated that controlled for the influence of base rates. This score was actually a conditional probability: given a subject stated a particular response, what was the likelihood that the response was correct? Once computed, differential accuracy scores were compared to overall accuracy in an ANOVA with age and sex of subject as between subject factors and the affect of the stimulus child and the type of accuracy score (differential vs. overall) as within subject factors. If base rates for category usage facilitated accurate recognition, overall accuracy should be significantly greater than differential accuracy, with the reverse being the case if base rates interferred with recognition.

It was found that the influence of base rates varied as a function of the different affects, F (3, 261) = 40.18, p <.001; F (3, 168) = 69.92, p <.001. Overall accuracy scores for the recognition of happiness were significantly higher than the differential accuracy scores (88%*vs. 67%*; 96%*vs. 71%*) indicating that base rates enhanced subjects' overall accuracy for happy slides. Contrariwise, differential accuracy was significantly higher than overall accuracy for the recognition of both anger (64%*vs. 55%*; 75%*vs. 64%*) and neutrality (48%*vs. 35%*; 65%*vs. 36%*), indicating that low base rates hindered subjects' overall accuracy for these affective states. For the recognition of sadness, overall accuracy scores were significantly higher than differential accuracy scores for children, (F (3,261) = 1.52, p <.21; F (3,168) = 13.82, p <.001, (53%* vs. 43%*; 73%* vs. 53%*) but not for adults (64%* vs. 64%*; 64%* vs. 73%*) suggesting that children's greater willingness to use the labels and enhanced their recall accuracy for the recognition of this state.

The possibility exists that children's and adults' inaccurate judgments of affective states were not randomly distributed but represent, instead, systematic tendencies to confuse one emotional state with another. This possibility was explored through individual ANOVAs of the responses subjects gave to each set of slides depicting a single affect. Thus, there were 4 parallel analyses in which the age and sex of the subject were between subject factors and the affect label, mode of production, race and sex of the stimulus child were within subject factors. Significant comparisons among means which solely reflect differences in accuracy will not be reiterated in this section.

Identification of happiness. Children's happy expressions tended to be correctly identified by both children and adults, F (3, 261) = 1119.37, p <.001; F (3, 168) = 1525.72, p <.001, and there was no systematic clustering in the distribution of inaccurate judgments.

Identification of sadness. Children's sad expressions were also correctly identified the majority of the time, but when subjects erred the incorrect judgments were more likely to be judgments of anger (19% and 15%) or neutral (16% and 12%) and less likely to be ones of happy (7%* and 3%*), F (3, 261) = 127.87, p <.001; F (3, 168) = 244.19, p <.001. In fact, for each sample approximately 45% of all errors entailed misidentifying sadness as anger and 45% misidentifying it as neutrality. The tendency to mislabel sad stimulus children as neutral was more characteristic of adults than of children, F (3, 261) = 5.65, p <.001; F (3, 168) = 5.23, p <.002 (18% vs. 14%; 17% vs. 6%). Finally, spontaneous displays of sadness were also more likely to be mislabeled as neutral than were posed expressions, F (3, 261) = 4.08, p <.008; F (3, 168) = 12.80, p <.001 (20% vs. 12%; 15% vs. 9%).

In certain instances, the sex and race of a stimulus child influenced inaccurate judgments of sadness, F (3, 261) = 13.72, p <.001; F (3, 168) = 7.36, p <.001. Expressions of sadness were found to be mislabeled as anger significantly more often when the stimulus child was a white rather than a black male (29%*vs. 15%; 28%*vs. 12%), while females' spontaneous displays of sadness were mislabeled as neutral more for black stimulus children than for white (36%*vs. 4%*; 40%* vs. 5%). The latter finding was more pronounced for adults than for children, F (3, 261) = 2.65, p <.05; F (3, 168) = 3.86, p <.01.

Identification of anger. Anger was identified accurately more often than it was not, but when errors occurred it was most often misidentified as sadness, F (3, 261) = 125.07, p <.001; F (3,168) = 176.02, p <.001 (21% and 18%). This systematic inaccuracy was particularly pronounced for children, F (3, 361) = 12.45, p <.001; F (3, 168) = 5.26, p <.01 (28% vs. 13%; 25% vs. 11%) and it was more likely to occur in response to spontaneous than posed expressions, F (3, 261) = 31.41, p <.001; F (3, 168) = 24.26, p <.001 (25%* vs. 16%, 24%* vs. 11%). There was a secondary tendency for sadness to be misidentified as happiness, but this was due almost entirely to the mislabeling of posed sadness as happiness (24%*and 22%*)more than spontaneous sadness (5%* and 4%*), F (3, 261) = 31.41, p <.001; F (3, 168) = 24.26, p <.001. This latter finding did not hold for white males, whose posed angry expressions were misidentified as happy no more often than their spontaneous expressions (3%*vs. 8%; 29%*vs. 8%*), F (3, 261) = 20.91, p <.001; F (3, 168) = 24.66, p .001. Finally the general finding that spontaneous displays of anger were more likely to be misidentified as sad than were posed expressions was expecially true for adults' judgments of white males, F (3, 261) = 7.76, p <.001; F (3, 168) = 4.57, p <.005.

Identification of neutrality. Neutral affective states were misidentified more often than they were identified accurately, and when neutrality was misidentified it was most frequently labeled as sadness (27% and 31%*), F (3, 261) = 20.88, p <.001; F (3, 168) = 21.78, p <.001. This was more characteristic of children (32% and 40% than adults (22% and 21%), F (3, 168) = 21.78, p <.001; F (3, 168) = 20.88, p <.001. The race and sex of the stimulus child also influenced inaccuracy, and neutrality was misidentified as sadness more

often for black females (40%*and 44%*)relative to white females (16% and 24%), and for white males (31%*and 38%*)relative to black males (21% and 17%), F (3, 261) = 27.27, p <.001; F (3, 168) = 52.08, p <.001. A higher order interaction further indicated that white females' posed expressions of neutrality were more likely to be misidentified as happy than white females' spontaneous expressions of neutrality (51%*vs. 19%; 61%*vs. 6%*), while the reverse was true for white males (30%*vs. 19%; 33%*vs. 7%), F (3, 261) = 8.14, p <.001; F (3, 168) = 18.98, p <.001.

Intensity

Adults' ratings of intensity (sample A) were subjected to a 5-way ANOVA in which the sex of the subject was the only between subject factor and within subject factors were the affect of stimulus category, mode of production and the race and sex of the stimulus child. There was no overall difference between spontaneous and posed expressions, but posed expressions of happiness were rated as significantly more intense than were spontaneous ones, F (3, 207) = 8.55, p <.001; F (3, 90) = 3.50, p <.02, higher order interaction further indicated that black females' posed expressions were generally rated as more intense than white females' posed expressions, F (1, 69) = 4.09, p <.04; F (1, 30) = 5.37, p <.03. Happiness was also rated as more intense when the stimulus child was black as opposed to white, F (3, 207) = 17.86, p <.001; F (3,90) = 5.01, p< .003.

Response Latencies

Response latencies (sample A) were subjected to the same ANOVA used in the analysis of adults' intensity ratings. Happy slides were responded to most rapidly (M = 4.18 sec), followed by anger (M = 4.70 sec), sadness (M = 5.09 sec) and neutrality (M = 5.60 sec), F (3, 54) = 7.68, p <.001.

In addition, male children identified affective states displayed by males more quickly than those displayed by females, and this was more pronounced when the stimulus child was white (4.65 sec vs. 4.97 sec) rather than black (4.63 sec vs. 4.76 sec), F (1, 18) = 5.79, $p < .05$. In addition, female subjects responded to white females' affective states more rapidly than they did to white males' affective states (4.93 sec vs. 5.13 sec), but they responded to black male expressions faster than those of black females' expressions (4.42 sec vs. 5.65 sec).

Discussion

Children's Recognition of Emotion in Peers

Children in both samples were surprisingly accurate in identifying facial expressions of happiness, sadness and anger displayed by their peers. If one excludes children's low accuracy for recognizing neutral displays of emotion, their pooled accuracy in the two samples (55%; 77%) is considerably higher than previous estimates in the literature that were based upon children's ability to decode adults' emotional states. For instance, Gates (1923) reported that four year old children recognized a woman's posed expressions of happiness 70% of the time and anger 40% of the time. Odom and Lemond (1972) have found that children of five years of age were able to correctly identify only 41% of the emotions depicted in a standard set of adult photographs. Thus, it appears that children's ability to decode their peers' facial expressions may be more developed than their ability to decode unfamiliar adults' facial expressions.

Since all of the children in this study had been enrolled in a preschool, it is possible that their ability to detect peers' emotional states may have been developed to a greater extent because of their experience in a situation

where affect recognition was an ecological advantage or even necessity. The potential role of current experience in influencing accuracy in the perception of emotions in peers is supported by other findings as well. Reichenbach and Masters (Note 4) found that four year olds were significantly better than second graders in recognizing spontaneous productions of happiness and anger displayed by other four year old children. The general statement that the ability to recognize affective states uniformly increases with age (Gates, 1923; Ekman & Oster, 1979) thus needs to be qualified so that the influence of concurrent experience is also considered. If one is willing to assume that preschoolers generally play with children of their own sex, the finding that girls were more rapid in identifying females' facial expressions whereas boys were more rapid in identifying those of males may also be interpreted to suggest that experience with other children is an important prerequisite for the development and maintenance of children's ability to recognize affective states in peers.

Children in each sample of the current study, as well as those in the study of Feinman and Feldman (Note 1) tended to confuse anger with sadness. This suggests that children's ability to distinguish between these two emotions is limited at this age, and they may, in fact, be utilizing a general category of negative affect in their gross classification of peers' emotional states. Furthermore, it appears that children's accuracy in identifying anger lags somewhat behind their ability to identify sadness. The progression of children's ability to discriminate between these two emotional states and others in the general class of negative affect deserves further study to test the hypothesis that affects are first sorted into general classes (e.g., positive/negative) before a more specific labeling occurs.

Adults' Recognition of Emotions in Children

Adults were highly accurate in recognizing children's facial expressions, although contrary to prediction females and males were equally good at recognizing children's facial expressions (cf. Hall, 1978). The finding that interactions between the type of affect displayed and characteristics of the stimulus child such as race and sex influenced adults' accuracy to a greater extent than children's suggests that the recognition of facial expressions is a more highly discriminated process in adults (Odom & Lemond, 1972), perhaps through the development of stereotypes (e.g., boys are more aggressive = angry). Adults' greater willingness to judge a child's state as neutral suggests that early socialization experiences dealing with affect are concerned more with non-neutral states and thus children may be inclined to overinterpret affect in others, moreso than are adults. Affective states are readily displayed in young children and many instances may be a natural consequence of adult or peer-mediated socialization experiences (Furman & Masters, 1980). Lacking, however, is any broad, descriptive information about the natural exposure of children to beliefs about affect, people's judgments of the emotional states of others, or the experience of having their own affective states be judged, accurately or inaccurately, by others. Without such information it is difficult to tease apart social learning factors contributing to emotion recognition from more personal factors such as implicit theories children may develop about emotions themselves. It is difficult to say, for example, whether children underuse the neutral category because neutral emotional expressions are truly uncommon (are they?) or because they learn to focus their attention on non-neutral states that may bear more social significance.

Spontaneous Versus Posed Production of Emotional Expressions

Children's spontaneous displays of happiness were more recognizable than posed displays, but for other emotions there was no difference in recognizability between posed and spontaneous productions. This is perhaps not surprising if one considers the demands children may encounter for emotional displays. It is surely more frequent that children are asked to "put on a happy face" than they are asked to (or want to) appear sad or angry. The tendency for posed anger to be misidentified as happiness may indicate that intentional displays of negative emotions by young children are more likely to occur during play than in situations when actual deception is intended. If this is so, older children, whose repertoire of displayed emotions may be employed to influence others seriously as well as in play, might be expected to have greater abilities to display negative states intentionally in highly recognizable form.

Spontaneous displays of sadness were more recognizable than posed only when the stimulus child was a black female. Spontaneous displays of anger were more recognizable than posed only when the stimulus child was a white female and, in fact, they were significantly less recognizable when the stimulus child was a white male. This may be a characteristic of the particular stimuli used, although the inclusion of two children of each race and sex was intended to avoid such a problem. It seems reasonable to conclude, then, that with certain affective states cultural variables relating to sex and ethnicity are also operative in modulating young children's emotional expressiveness. For example, given that displays of anger are socially less acceptable in males than females (Maccoby & Jacklin, 1974), it is not surprising that boys' expressions of anger

are less recognizable. This conclusion is not without a caveat, however. Although the findings of the present study replicated in two geographic locations, some of the results suggesting ethnic or cultural variation in the recognizability of emotional expressions are not readily interpretable. On the basis of the present findings, for example, it appears that spontaneous productions of sadness in black females are particularly recognizable. Consequently, while findings such as these appear to be robust, the presence of some effects for which there is no clear theoretical or data-based rationale for highly specific interactions between sex and ethnic status as determinants of the recognizability of emotional states means these results should indeed be interpreted with caution.

Accuracy and Inaccuracy in the Identification of Emotional Expressions

In addition to "true" recognition, accuracy in labeling another's emotional state may also be influenced by factors unrelated to recognition. It should be acknowledged, of course, that the social consequence of accurately labeling another's emotional state is likely to be the same whether the accuracy stemmed from a valid recognition process or was in some way inadvertent. However, the present results indicate that both accuracy and inaccuracy in recognizing emotional expressions is significantly influenced by processes other than recognition, in this case the base rates for the use of emotion category labels. Both adults and children have varying preferences for the use of emotion labels, and these preferences affect the overall accuracy of their judgments. Happiness is not as recognizable as overall accuracy rates might make it seem, nor are angry or neutral emotional states as difficult to recognize as their low accuracy rates might indicate. The finding that base rates for the

use of different emotional states varied less for adults than for children across the different states used in the present study suggests that one aspect of learning to identify emotions in others accurately is an increased ability or willingness to use different affect labels with more equal frequencies. Another possibility is that an increased ability to recognize emotional expressions overrides any preferences for particular labels. While these two hypotheses cannot be differentiated on the basis of the present data, research on the recognition of emotional expressions must take into account the fact that accuracy or inaccuracy in identifying expressions is determined by more than the mere ability to decode expressive cues accurately.

Clues to the process of identifying emotional expressions may also be gleaned from examination of the systematic inaccuracies in the recognition of particular states. As noted earlier, children's confusion of anger and sadness may indicate that they sort emotional expressions into larger categories of positive/negative before assigning more specific labels. The tendency for neutral expressions to be labeled as sad, especially by children, may reflect either a tendency to overinterpret the degree to which people are always experiencing some emotional state, as discussed earlier, or it may indicate that expressions of emotion are indeed omnipresent and neutral expresssions are rare and likely to be the consequence of sadness whose public expression is being inhibited. Little is known about the base rates for the actual expression of different emotional states in common environments, and such knowledge would be helpful in exploring the determinants of base rates in the use of emotional labels as well as the development of processes of social inference about the emotions being experienced by others given particular emotional expressions.

Footnotes

1. Statistical results will be uniformally presented in the order sample A; sample B.
2. In addition to comparisons among means, it is also of interest to know whether the proportion of (accurate) judgments differed from chance (25%). Those percentages that are significantly greater or less than chance ($p < .05$, two-tailed) are denoted by an asterisk.
3. Follow-up comparisons utilized Duncan's Multiple Range Test. In general, only those comparisons achieving significance at the .05 level of beyond are reported. When the difference in one sample fails to reach significance, an asterisk indicates the nonsignificant comparison.

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